

[AI & Machine Learning Products](https://cloud.google.com/products/machine-learning/) (<https://cloud.google.com/products/machine-learning/>)

[Cloud Vision API](https://cloud.google.com/vision/) (<https://cloud.google.com/vision/>)

[Documentation](https://cloud.google.com/vision/docs/) (<https://cloud.google.com/vision/docs/>) [Guides](#)

Detect Labels

Note: Cloud Vision now supports offline **asynchronous batch image annotation** for all features. This asynchronous request supports up to 2000 image files and returns response JSON files that are stored in your Google Cloud Storage bucket. For more information about this feature, refer to [Offline batch image annotation](https://cloud.google.com/vision/docs/batch) (<https://cloud.google.com/vision/docs/batch>).

The Vision API can detect and extract information about entities in an image, across a broad group of categories.

Labels can identify general objects, locations, activities, animal species, products, and more. If you need targeted custom labels, [Cloud AutoML Vision](https://cloud.google.com/vision/automl/docs) (<https://cloud.google.com/vision/automl/docs>) allows you to train a custom machine learning model to classify images.

Labels are returned in English only. The [Cloud Translation](https://cloud.google.com/translate/) (<https://cloud.google.com/translate/>) API can translate English labels into any of a number of [other languages](https://cloud.google.com/translate/docs/languages) (<https://cloud.google.com/translate/docs/languages>).



Image credit: [Alex Knight](https://unsplash.com/photos/wfwUpfVqrKU) (https://unsplash.com/photos/wfwUpfVqrKU) on [Unsplash](https://unsplash.com/) (https://unsplash.com/).

For example, the image above may return the following list of labels:

Description	Score
Street	0.872
Snapshot	0.852
Town	0.848
Night	0.804
Alley	0.713

Note: Using this API in a mobile app? Try [ML Kit for Firebase](https://firebase.google.com/docs/ml-kit/) (https://firebase.google.com/docs/ml-kit/), which provides native Android and iOS SDKs for using Cloud Vision services, as well as on-device ML Vision APIs and on-device inference using custom ML models.

Label detection requests

Set up your GCP project and authentication

- ▼ If you have not created a [Google Cloud Platform \(GCP\) project](https://cloud.google.com/docs/overview/#projects) (<https://cloud.google.com/docs/overview/#projects>) and service account credentials, do so now. Expand this section for instructions.

1. [Sign in](https://accounts.google.com/Login) (<https://accounts.google.com/Login>) to your Google Account.

If you don't already have one, [sign up for a new account](https://accounts.google.com/SignUp) (<https://accounts.google.com/SignUp>).

2. Set up a Cloud Console project.

[SET UP A PROJECT](#)

Click to:

- Create or select a project.
- Enable the Cloud Vision API for that project.
- Create a service account.
- Download a private key as JSON.

You can view and manage these resources at any time in the [Cloud Console](https://console.cloud.google.com/) (<https://console.cloud.google.com/>).

3. Set the environment variable **`GOOGLE_APPLICATION_CREDENTIALS`** to the file path of the JSON file that contains your service account key. This variable only applies to your current shell session, so if you open a new session, set the variable again.

- ▼ **Example:** Linux or macOS

Replace **`[PATH]`** with the file path of the JSON file that contains your service account key.

```
export GOOGLE_APPLICATION_CREDENTIALS="[PATH]"
```

For example:

```
export GOOGLE_APPLICATION_CREDENTIALS="/home/user/Downloads/service-account-fil
```

- ▼ **Example:** Windows

Replace **`[PATH]`** with the file path of the JSON file that contains your service account key, and **`[FILE_NAME]`** with the filename.

With PowerShell:

```
$env :GOOGLE_APPLICATION_CREDENTIALS="[PATH]"
```

For example:

```
$env :GOOGLE_APPLICATION_CREDENTIALS="C:\Users\username\Downloads\[FILE_NAME].js"
```

With command prompt:

```
set GOOGLE_APPLICATION_CREDENTIALS=[PATH]
```

4. Install and initialize the Cloud SDK (<https://cloud.google.com/sdk/docs/>).

Detect Labels in a local image

The Vision API can perform feature detection on a local image file by sending the contents of the image file as a [base64 encoded](https://cloud.google.com/vision/docs/base64) string in the body of your request.

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Before using any of the request data below, make the following replacements:

- **base64-encoded-image**: The base64 representation (ASCII string) of your binary image data. This string should look similar to the following string:

- `/9j/4QAYRXhpZgAA...9tAVx/zDQDlGxn//2Q==`

Visit the [base64 encode](https://cloud.google.com/vision/docs/base64) topic for more information.

HTTP method and URL:

```
POST https://vision.googleapis.com/v1/images:annotate
```

Request JSON body:

```
{
  "requests": [
    {
      "image": {
```

```
    "content": "base64-encoded-image"
  },
  "features": [
    {
      "maxResults": 5,
      "type": "LABEL_DETECTION"
    }
  ]
}
```

To send your request, choose one of these options:

CURL

POWERSHELL

Note: If you are not executing the command below from [Cloud Shell](https://cloud.google.com/shell/docs) (<https://cloud.google.com/shell/docs>) or [Compute Engine](https://cloud.google.com/compute/docs) (<https://cloud.google.com/compute/docs>), ensure you have set the [GOOGLE_APPLICATION_CREDENTIALS](https://cloud.google.com/docs/authentication/production) (<https://cloud.google.com/docs/authentication/production>) environment variable to your service account private key file path.

Save the request body in a file called `request.json`, and execute the following command:

```
curl -X POST \
-H "Authorization: Bearer "$(gcloud auth application-default print-access-token)
-H "Content-Type: application/json; charset=utf-8" \
-d @request.json \
https://vision.googleapis.com/v1/images:annotate
```

If the request is successful, the server returns a `200 OK` HTTP status code and the response in JSON format.

A `LABEL_DETECTION` response includes the detected labels, their score, topicality, and an opaque label ID, where:

- `mid` - if present, contains a machine-generated identifier (MID) corresponding to the entity's Google Knowledge Graph entry. Note that `mid` values remain unique across different languages, so you can use these values to tie entities together from different languages. To inspect MID values, refer to the [Google Knowledge Graph API](https://developers.google.com/knowledge-graph/reference/rest/v1/) (<https://developers.google.com/knowledge-graph/reference/rest/v1/>) documentation.
- `description` - the label description.

- **score** - the confidence score, which ranges from 0 (no confidence) to 1 (very high confidence).
- **topicality** - The relevancy of the ICA (Image Content Annotation) label to the image. It measures how important/central a label is to the overall context of a page.

```
{
  "responses": [
    {
      "labelAnnotations": [
        {
          "mid": "/m/01c8br",
          "description": "Street",
          "score": 0.87294734,
          "topicality": 0.87294734
        },
        {
          "mid": "/m/06pg22",
          "description": "Snapshot",
          "score": 0.8523099,
          "topicality": 0.8523099
        },
        {
          "mid": "/m/0dx1j",
          "description": "Town",
          "score": 0.8481104,
          "topicality": 0.8481104
        },
        {
          "mid": "/m/01d74z",
          "description": "Night",
          "score": 0.80408716,
          "topicality": 0.80408716
        },
        {
          "mid": "/m/01lwf0",
          "description": "Alley",
          "score": 0.7133322,
          "topicality": 0.7133322
        }
      ]
    }
  ]
}
```



Detect Labels in a remote image

For your convenience, the Vision API can perform feature detection directly on an image file located in Google Cloud Storage or on the Web without the need to send the contents of the image file in the body of your request.

Caution: When fetching images from HTTP/HTTPS URLs, Google cannot guarantee that the request will be completed. Your request may fail if the specified host denies the request (for example, due to request throttling or [DOS \(https://en.wikipedia.org/wiki/Denial-of-service_attack\)](https://en.wikipedia.org/wiki/Denial-of-service_attack) prevention), or if Google throttles requests to the site for abuse prevention. **You should not depend on externally-hosted images for production applications.**

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Before using any of the request data below, make the following replacements:

- **cloud-storage-image-uri**: the path to a valid image file in a Cloud Storage bucket. You must at least have read privileges to the file. Example:

- `gs://cloud-samples-data/vision/label/setagaya.jpeg`

HTTP method and URL:

POST `https://vision.googleapis.com/v1/images:annotate`

Request JSON body:

```
{
  "requests": [
    {
      "image": {
        "source": {
          "gcsImageUri": "cloud-storage-image-uri"
        }
      },
      "features": [
        {
          "maxResults": 5,
          "type": "LABEL_DETECTION"
        }
      ]
    }
  ]
}
```

```
}
]
}
```

To send your request, choose one of these options:

CURL

POWERSHELL

Note: If you are not executing the command below from [Cloud Shell](https://cloud.google.com/shell/docs) (<https://cloud.google.com/shell/docs>) or [Compute Engine](https://cloud.google.com/compute/docs) (<https://cloud.google.com/compute/docs>), ensure you have set the [GOOGLE_APPLICATION_CREDENTIALS](https://cloud.google.com/docs/authentication/production) (<https://cloud.google.com/docs/authentication/production>) environment variable to your service account private key file path.

Save the request body in a file called `request.json`, and execute the following command:

```
curl -X POST \
-H "Authorization: Bearer "$(gcloud auth application-default print-access-token)
-H "Content-Type: application/json; charset=utf-8" \
-d @request.json \
https://vision.googleapis.com/v1/images:annotate
```

If the request is successful, the server returns a `200 OK` HTTP status code and the response in JSON format.

A `LABEL_DETECTION` response includes the detected labels, their score, topicality, and an opaque label ID, where:

- `mid` - if present, contains a machine-generated identifier (MID) corresponding to the entity's Google Knowledge Graph entry. Note that `mid` values remain unique across different languages, so you can use these values to tie entities together from different languages. To inspect MID values, refer to the [Google Knowledge Graph API](https://developers.google.com/knowledge-graph/reference/rest/v1/) (<https://developers.google.com/knowledge-graph/reference/rest/v1/>) documentation.
- `description` - the label description.
- `score` - the confidence score, which ranges from 0 (no confidence) to 1 (very high confidence).
- `topicality` - The relevancy of the Image Content Annotation (ICA) label to the image. It measures how important/central a label is to the overall context of a page.

```
{
  "responses": [
    {
```



```
"labelAnnotations": [  
  {  
    "mid": "/m/01c8br",  
    "description": "Street",  
    "score": 0.87294734,  
    "topicality": 0.87294734  
  },  
  {  
    "mid": "/m/06pg22",  
    "description": "Snapshot",  
    "score": 0.8523099,  
    "topicality": 0.8523099  
  },  
  {  
    "mid": "/m/0dx1j",  
    "description": "Town",  
    "score": 0.8481104,  
    "topicality": 0.8481104  
  },  
  {  
    "mid": "/m/01d74z",  
    "description": "Night",  
    "score": 0.80408716,  
    "topicality": 0.80408716  
  },  
  {  
    "mid": "/m/01lwf0",  
    "description": "Alley",  
    "score": 0.7133322,  
    "topicality": 0.7133322  
  }  
]  
}
```

Try it

Try label detection below. You can use the image specified already (<gs://cloud-samples-data/vision/label/setagaya.jpeg>) or specify your own image in its place. Send the request by selecting **Execute**.



Image credit: [Alex Knight](https://unsplash.com/photos/wfwUpfVqrKU) (https://unsplash.com/photos/wfwUpfVqrKU) on [Unsplash](https://unsplash.com/) (https://unsplash.com/).

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